IN THE SPECIFICATION

Please amend the paragraph beginning at page 4, line 9 as follows.

The sampled grating approach is limited largely by the fact that the unsampled grating κ is technologically limited by optical scattering to around 300 cm^{-1}. Another limiting factor is that the reflectivity of the multi-peaked mirror falls off at the outer peaks, along with the gain. Therefore, it is desirable to increase the effective κ of each peak as well as compensate for any loss in gain with increased reflectivity. In order to increase the κ of the SG mirror peaks, the sampling duty ratio $\underline{L_B/\Lambda}$ (the length of sampled portion $\underline{L_B}$ divided by the sampling period $\underline{\Lambda}$) must also increase. This duty ratio, however, is inversely proportional to the wavelength range the multi-peaked SG mirror can effectively cover, which limits the tuning range of a SG-DBR laser. See the mirror reflectivity peak envelope of Figure 3b.

Please amend the paragraph beginning at page 4, line 18 as follows.

Therefore, what is needed in the art is a sampled grating mirror that covers a wide tuning range with the desired κ, as well as having mirror peaks that do not have substantial power ~~dorpoffs~~dropoffs at the edges of the band.

Please amend the paragraph beginning at page 7, line 19 as follows.

An example of the mirror spectra from a conventional pair of mirrors, without the improved configuration, is shown in Figure 2. Mathematically, the sampled grating can be thought of as the multiplication of a grating function and a sampling function f(x), as illustrated in Figure 3a and 3b. In the conventional design, the sampling function f(x) can only have the value of +1 or 0, due to the technological method used in fabrication. The grating function is also technologically limited to κ's less than 300 cm^{-1}, to prevent optical scattering.

Please amend the paragraph beginning at page 7, line 25 as follows.

Examining Figure 3, the Fourier transform relation between the square sampling function f(x) of the conventional SG mirror and its ~~sine~~ sine function mirror peak envelope of reflectivity peaks is clearly obvious. A typical sampled grating includes a plurality of sampled grating portions (also known as "grating bursts") separated from each other by portions with no grating. The sampled grating can

be defined by the length L_B of each sampled grating portion and the sampling period Λ. See Figure 3a. Modification of the sampling function f(x) to tailor the frequency response $F(\lambda)$ of the peak envelope is well known to those skilled in the art. In the case of the SG-DBR to be produced with a phase mask, the sampling function f(x) can only take the value of 0, 1 or –1, with –1 indicating a phase reversal of the grating function. Thus, sampling function value of –1 indicates a sampled grating portion having a phase opposite that of another sampled grating portion having a value of 1.

Please amend the paragraph beginning at page 8, line 10 as follows.

An embodiment of this invention can be as simple as adding a single anti-phased (i.e. having a phase opposite that of the sampled grating portions 402A, 402B) first grating burst portion 400 at the beginning of the first sampled grating portion 402A of a plurality of sampled grating portions 402A, 402B as shown in Figure 4. The first grating burst portion 400 is defined by a length L_{B-} and a distance L_Φ from the first sampled grating portion 402A. Properly positioned, this first grating burst portion 400 can flatten the multi-peaked reflectivity spectrum, or make the reflectivity larger at the edges, as shown in Figure 5. Thus, maximum values for a coupling constant κ can be made substantially uniform across a selected tuning range. These examples are very simple, and more sophisticated tailoring can be achieved identifying the analog sampling function that produces the desired effect and digitizing it using the strategies commonly employed in digital sampling applications.

Please amend the paragraph beginning at page 8, line 16 as follows.

Another sampling function is shown in the lower half of Figure 6. The entire sampled grating portion 600 has a first phase (associated with the L_{B+} middle length 602) and a second phase (associated with the L_{B-} end lengths 604A, 604B). Reversing the phase of the grating at the beginning and end of each ~~sample~~ sampled grating portion 600 can be used to tailor the peak envelope to allow for higher kappa over a larger range. Figures 7a and 7b illustrate an example of the peak envelopes that would result from the modification discussed in Figure 6, showing that the modification produces the intended effect: a mirror with a wider wavelength range and with a larger κ throughout.